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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/902,425 | 07/10/2001 | Michael A. Serio | AFU-20 | 7678 |

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| EXAMINER | |
|---|---|
| RIDLEY, BASIA ANNA | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1764 | |

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/902,425 | SERIO ET AL. | |
| | Examiner | Art Unit | |
| | Basia Ridley | 1764 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *14 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) *1-9* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election with traverse of Invention II, claims 10-17 in the reply filed on 14 June 2004 is acknowledged. The traversal is on the ground(s) that the claims of Groups I and II are entirely parallel and no distinction exists that would warrant of justify restriction under Rules of Practice. This is not found persuasive because the apparatus as claimed can be used to practice another and materially different process, such as for production of electricity. The process, as recited in claim 1, is not for production of electricity but for production of synthesis gas, which has many uses other than production of electricity. The requirement is still deemed proper and is therefore made FINAL.

2. Claims 1-9 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Invention, there being no allowable generic or linking claim.

### *Specification*

3. The disclosure is objected to because of the following informalities:

- the data presented in Table 1 is not clear because the columns are not properly aligned;
- specification contains references to both, "FT-IR" and "FTIR" and it should be amended to consistently use either notation;
- P11/L7, "heterotomic" should be corrected;
- the following acronyms and/or references are not explained in specification: "TGA" (e.g. P4/L8), "GD system" (e.g. P9/L23-24), "VISTA" (e.g. P15/L6) and "Psichogios and Ungar" (e.g. P15/L15).

Appropriate correction is required.

***Claim Objections***

4. Claims 15-16 are objected to because of the following informalities:

- the recitation "The apparatus of Claim 14" in line 1 of claim 15 should be replaced with --The system of Claim 14--;

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 10-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 10-17, the recitation "system" renders said claims indefinite, because it is not clear which statutory class of invention, either a process or an apparatus, the applicant is intending to encompass. For the purpose of this Office action said claims were interpreted as being drawn to an apparatus, because recitation in line 5 of claim 10: "constructed for effecting a process", clearly indicates that recited process steps are merely directed to intended use.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by Chittick (USP 4,421,524).

Regarding claim 10, Chittick discloses a power generation system, comprising;

- a gas-fueled power generator (C1/L32-47 & C5/L64-C6/L4);
- two-stage reaction apparatus for producing a fuel gas product from a hydrocarbonaceous material, operatively connected to supply fuel gas to said power generator (C2/L7-55 & C5/L1-C6/L4);
- said reaction apparatus being constructed for effecting a process comprising the following steps, carried out:
- (a) introducing a non-gaseous hydrocarbonaceous material into a pyrolysis chamber, comprising a first stage of said apparatus, and pyrolyzing the hydrocarbonaceous material therein so as to produce a primary fuel gas mixture, a pyrolysis liquid, and a first carbonaceous residue (C3/L1-C6/L4);
- (b) introducing the primary fuel gas mixture and the pyrolysis liquid into a second chamber, comprising a second stage of said apparatus and containing a catalyst, and heating said liquid therein, in a substantially non-oxidizing atmosphere, to a temperature of about 900° to 1100° C and substantially above the temperature at which pyrolysis is effected in step (a), so as to produce additional fuel gases and additional solid carbonaceous residue, without substantially altering the composition of the primary fuel gas mixture (C3/L1-C6/L4);
- (c) withdrawing the primary fuel gas mixture and the additional fuel gas from said second chamber (C3/L1-C6/L4); and
- (d) introducing air, oxygen, carbon dioxide or steam into each of said chambers to effect

reaction with, and at least partial removal of, said carbonaceous residue therein (C4/L61-68).

Regarding claim 10, while Chittick does not explicitly disclose means for controlling the flow of fuel gas from said reaction apparatus to said generator, said means are inherent in the system of Chittick.

Regarding limitations recited in claim 10 which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115. Further, process limitations do not have patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim."

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chittick (USP 4,421,524) in view of Aldridge (USP 3,816,298) or Bayer (USP 5,114,541).

Regarding claim 17, Chittick discloses all of the claims limitations as set forth above. Additionally the reference discloses the system wherein said second chamber contains a catalyst (C4/L61-68 & C3/L61-68), but the reference does not explicitly disclose said catalyst being a silica gel-based catalyst. Both, Aldridge (C3/L46-C4/L50) or Bayer (C2/L7-20) establish equivalency of

catalysts used by Chittick with silica gel-based catalyst. As instant specification is silent to unexpected results, it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the catalyst of Chittick with silica gel-based catalyst, since such modification would have involved a mere substitution of known equivalents. A substitution of known equivalents is generally recognized as being within the level of ordinary skill in the art.

Regarding limitations recited in claim 17 which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115. Further, process limitations do not have patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim."

11. Claims 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chittick (USP 4,421,524) in view of Moriarty et al. (USP 5,993,751) and further in view of Admitted Prior Art.

Regarding claims 11-16, Chittick discloses all of the claims limitations as set forth above, but the reference does not explicitly disclose means for controlling the steps of the process by monitoring the formation of products.

Moriarty et al. teaches that varying process conditions will affect product composition (C3/L20-27, C3/L66-C4/L2, C6/L55-C7/L3), a system for controlling product composition will inherently include data processing means for controlling the steps of the process.

It would have been obvious to one having ordinary skill in the art at the time of the invention to use data processing means for controlling the steps of the process, as taught by

Moriarty et al., in the system of Chittick, for the purpose of increasing system flexibility and improving operation efficiency by allowing production of products having desired composition.

While the combined references of Chittick in view of Moriarty et al. do not explicitly disclose said data processing means implementing an artificial neural network model based upon product concentrations, the applicant admits, in Admitted Prior Art (see pages 14 and 15 of instant disclosure) that artificial neural network models showed a high degree of success in correlating process conditions and desired product yields. In view of said disclosure, and since the application is silent to unexpected results, an ordinary artisan would have used data processing means implementing an artificial neural network model based upon product concentrations in the system of Chittick in view of Moriarty et al., and used said processing means correlate process conditions to the desired product yields, since doing so would amount to nothing more than a use of a known controller for its intended use in a known environment to accomplish entirely expected result.

Regarding limitations recited in claims 11-16 which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115. Further, process limitations do not have patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim."

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the

contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

***Conclusion***

13. In view of the foregoing, none of the claims are allowed.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Basia Ridley, whose telephone number is (571) 272-1453.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola, can be reached on (571) 272-1444.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Technical Center 1700 General Information Telephone No. is (571) 272-1700. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Questions on access to the Private PAIR system should be directed to the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

Basia Ridley
Examiner
Art Unit 1764

BR
September 20, 2004